A SEMINAR PAPER

ON

Role of Radio and Television in Agricultural Development

COURSE CODE: AER 698

COURSE TITLE: SEMINAR

SUBMITTED TO:

Dr. Md. Mizanur Rahman
Professor
Dr. A. K. M. Aminul Islam
Professor
Dr. Md. Sanaullah Biswas
Associate Professor
Dr. Shilpi Islam
Associate Professor
BSMRAU

Major Professor
Dr. Md. Safiul Islam Afrad
Professor
Department of Agricultural Extension
& Rural Development
Bangabandhu Sheikh Mujibur Rahman
Agricultural University

Submitted by:

Syeda Tasnim Jannat

Reg. No: 17-11-4522
PhD student
Term: Autumn-2018
Department of Agricultural Extension & Rural Development
BSMRAU

BANGABANDHU SHEIKH MUJIBUR RAHMAN AGRICULTURAL UNIVERSITY
SALNA, GAZIPUR-1706

Role of Radio and Television in Agricultural Development[1]

by

Syeda Tasnim Jannat[2]

Abstract

Radio and television are communication media which have great potential for influencing farmers to stimulate agricultural development. The review work was carried out to explore the researches on the role of radio and television in agricultural development. This review work was conducted to assess how radio and television are contributing to the growth of agriculture sector. All information was collected from secondary sources. A number of researches were conducted by several researchers which reflected that radio and television were used by the farmers in different countries to different extent. It was observed in several researches that both the radio and television were perceived as effective by the farmers. In several researches it was observed that radio had an effective role in improving awareness and increasing level of knowledge of farmers. Higher level of adoption of agricultural technologies due to radio agricultural programmes were also observed in several researches. The farmers were benefitted with increased income and increased marketing opportunities by accessing marketing information from radio programmes. In several researches it was revealed that television had a significant role in increasing agricultural knowledge of the farmers. A research carried out to assess the role of television channels on agricultural development in Pakistan showed that television was moderately effective in increasing their agricultural income. Another study carried out in Bangladesh revealed that farmers obtained high production utilizing the agricultural information obtained from television channels. In another study it was found that television was the most effective mass media channel for influencing knowledge increase of the farmers. Some problems were faced by the farmers in using radio and television in a study. In several studies, it was revealed that radio and television both had significant role in agricultural development.

Key words: Mass media channel, agricultural knowledge, agricultural technology, agricultural income, production

---

[1] Title of the seminar paper

[2] PhD Student, Department of AERD, BSMRAU

TABLE OF CONTENTS

SL.NO.	TITLE	PAGE NO.
1.	ABSTRACT	i
2.	TABLE OF CONTENTS	ii
3.	LIST OF TABLES	iii-iv
4.	LIST OF FIGURES	v
5.	INTRODUCTION	1-3
6.	MATERIALS AND METHODS	4
7.	REVIEW OF FINDINGS	5-21
8.	CONCLUSIONS	22
9.	REFERENCES	23-25

LIST OF TABLES

TABLE NO.	TITLE	PAGE
01	Frequency of farmers receiving agricultural information	06
02	Frequency of correct response to pre- and post-test among farmers by questions	08
03	Mean scores of farmers' knowledge by pre-test and post-test	08
04	Mean scores of extent to which the radio farmer programme has enhanced the adoption of improved technologies disseminated as perceived by farmers.	09
05	Distribution of the farmers according to adoption of Agricultural information aired through radio programs (n=90)	10
06	Distribution of farmers based on the effectiveness and importance of radio agricultural programmes in awareness creation (n=90)	10
07	Respondents' perceived benefits of the commodity trend programme	11
08	Distribution of respondents by benefits derived from Ere-agbe farm broadcast	12
09.	Extent of agricultural information obtained through TV	13
10.	Respondents perceptions on the effectiveness of television in increasing agricultural income	13
11.	Extent of initiatives to apply knowledge in agricultural process after watching	14
12	Analysis of variance for gain in knowledge among treatments	15
13	Duncan's post hoc test for comparison of differences	15
14	Chi-square test of correct response of TV viewer (Kohgiluyehva Buyer Ahmad) in pre and post-test by questions	16
15	t-test for change in knowledge level from pretest to posttest	17
16	Agricultural information related to crops obtained through TV	18
17	Extent of agricultural information related to livestock obtained through TV	18
18	Agricultural information related to poultry farming obtained	19

	through TV	
19	Agricultural information related to other agriculture enterprises obtained through TV	19
20	Principal sources of agricultural information among farming population	20
21	Descriptive statistics on constraints encountered by the Nsukka rural farmers' respondents in their quest to access agricultural information from their community	21

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
01	Communication channels used by farmers in rural areas	05
02	Sources of information the rural women use	06
03	Types of information needs of the rural women	07
04	Effect of information adopting in agricultural production	14

CHAPETR I

INTRODUCTION

1.1. General Background

Radio and television are two of the greatest inventions of science which revolutionized communications among all sectors of human lives including agriculture. Radio was invented by Italian inventor Guglielmo Marconi in the 1890s (Wikipedia, 2018a). Television was invented by Scottish inventor John Logie Baird in 1925 (National Academy of Sciences, 2018). Both these inventions help the human societies around the world in news broadcast, entertainment, communication, development, disaster management, technology dissemination and various areas from the very beginning of the inventions. Before the radio and television, transistor was invented which subsequently assumed as an essential component in nearly most modern electronic gadgets including these devices (Interesting Engineering, 2016). More improvements were made on these two technologies and more avenues of their utilization are being opened for the betterment of the human lives. Radio and television are primarily the means of mass communication. Mass media are those channels of communication which can expose large numbers of people to the same information at the same time (Oakley and Garforth, 1985). Mass communication is targeted for the general people for creating awareness and technology dissemination. These technologies may relate to crops, livestock, fisheries, forestry and meteorological information that impact on agricultural development. In agriculture these features are utilized for the dissemination of technologies. Agricultural growth is vital for promoting economic advancement and supplying food to the increasing populations in most less developed countries (Datt and Ravallion, 1996; Mendola, 2007). Since Bangladesh is a developing country and agricultural development is primary necessity for the country's smooth economy, all interventions should be focused on this issue. So the radio and television as the mass media channels are very much essential in agricultural technology dissemination.

Radio started functioning in Bangladesh during the British regime and experienced remarkable journey. The first ever radio station of Bangladesh was established in the name of All India Radio in 1939 in Old Dhaka (Jahan, 2017; Bangladesh Betar, 2018). Later in 1960 the radio station was shifted to Shahbag, Dhaka. The Bangladesh Betar of today started

functioning as national radio in 1983 and the station was shifted again to Agargaon, Dhaka (Jahan, 2017; Bangladesh Betar, 2018). 'Desh Amar, Mati Amar' is an agricultural programme which was broadcast on Bangladesh Betar in the past and the programme was very warmly enjoyed by the farmers (Jahan, 2017). This programme was also popularly known to farmers as 'Majider Maar Ashar'. The public radio station in Bangladesh is Bangladesh Betar. Besides, there are 28 private radio stations in Bangladesh which were licensed by Ministry of Information in 2015 for FM broadcasting (Wikipedia, 2018b).

Television started in 1964 in Bangladesh in the name of Pakistan Television Corporation which was renamed as Bangladesh Television after independence in 1971 (Bangladesh Television. 2018). In Bangladesh, Public television channels are BTV, BTV World and Sangsad Television. There are 29 private television channels in Bangladesh (Wikipedia, 2018c). Among the television channels BTV, Channel i, Bangla Vision, ATN Bangla, Mohona TV, Boishakhi TV, My TV, Dipto TV, Ekattor TV etc. have prominent agricultural programmes which are popular among farmers, entrepreneurs and interested people.

Many informative agricultural programmes are broadcast on radio and public and private channels of television in Bangladesh. Mati o Manush, Banglar Krishi, Krishi Dibanishi, Bangladesh Krishi, SAARC Krishi, Hridoye Mati o Manush, Hridoye Mati o Manusher Dak, Fire Cholo Matir Tane, Shamol Bangla, Shabuj Bangla, Dipto Krishi, Matir Shubash, Shonali Din, Krishi Jog, Khamarbari etc. are broadcast on television. Desh Amar, Mati Amar, Krishi Samachar, Amar Desh, Shonali Fasal, Krishikatha etc. are broadcast on radio (Alam *et al.*, 2012; DAE, 2016). Agricultural news is also broadcast embedded in the national and regional news. Three categories of radio transmission are available now in Bangladesh: Bangladesh Betar, FM Radio and Community radio (DAE, 2016). Seventeen community radio programmes are in existence in the country (DAE, 2016). The community radio established in Amtali, Barguna is dedicated for agricultural programme broadcasting and the slogan of this community radio is 'My Radio My Voice' (AIS, 2018).

The role of radio was dominant in the past but presently the role of television in agricultural development is increasing day by day as television sets are accessible easily with reasonable cost (DAE, 1999; DAE, 2016). Nowadays emergence of many other information and communication technologies might have suppressed the appeal of radio to many people of the country but still radio is the best communication medium to the people living in the remotest or coastal areas of the country, who have not been even introduced with modern

communication technologies yet (Jahan, 2017). Radio is the most effective communication medium which becomes evident during disasters and at the inaccessible locations like sea, hilly areas and other remote areas. In Asian countries large number of poor farmers uses radio to get agricultural information (Baig and Aldosari, 2013). Presence of radio and/or television in the farmer's home has positive effect on adoption of agricultural technologies (Abebe *et al.*, 2013). Around 300,000 farmers were benefitted from the information broadcasted in the agricultural programmes of four TV Channels in Bangladesh (Katalyst, 2018).

1.2. Rationale

The development in agriculture of a country chiefly depends on its agricultural extension delivery system. The technologies generated by research institutes are carried to the farmers through this extension delivery system. The major strength of extension service is the extension workers who personally work through various extension methods to transfer the technology to the farmers and get them adopted for increased production. The complementary and supplementary tools for extension systems are mass media like radio, television, mobile phone, internet, result and method demonstration etc. Radio became an important tool for dissemination of agricultural technologies when television was not available easily. When television emerged as an available tool the advantage of audio and video systems in the same device was quickly appreciated by all categories of people including farmers. As radio and TV have been identified as vital tool for dissemination of agricultural technologies it is necessary to assess what was the role of these media in agricultural development. The purpose of this review work is based on the above idea. The findings of the review will help the policy makers, extensionists, broadcasters, scientists, teachers and stakeholders for formulating their future plan of action towards development of agriculture.

1.3 Objectives of the Study

The study has been undertaken to accomplish the following objectives:

a) To assess the status of radio and television use in agriculture;

b) To explore the role of radio in agricultural development;

c) To identify the role of television in agricultural development; and

d) To find out the problems related to use of radio and television in agriculture.

CHAPTER II

MATERIALS AND METHODS

This seminar paper is completely a review paper and the necessary information has been collected from the secondary sources. For the preparation of this seminar paper, the relevant thesis, journals, reports and books that were available in the internet were studied. Besides, printed publications and web portals of various agencies were also studied. After collection the available information were collated and compiled and this seminar paper has been prepared.

CHAPTER III

REVIEW OF FINDINGS

The relevant information in connection to the role of radio and television in agricultural development are furnished below:

3.1 STATUS OF RADIO AND TELEVISION USE IN AGRICULTURE

Mtega and Msungu (2013) carried out a research in Tanzania where the researchers found that radio was the highest ranked communication media which were used by the farmers. The reason of using radio was wide coverage of radio waves and infrastructure throughout the study area. Use of television ranked third among all the communication media (Figure-1). Some television stations could be watched in the study area but very few people used to watch those channels since television is not portable, needs electricity and mostly one way in nature. Sife *el al.* (2010) and Oyegbami and Fabusoro (2003) found similar result and argued that use of television was hindered by some factors such as lack of electricity and terrestrial connections in rural Tanzania.

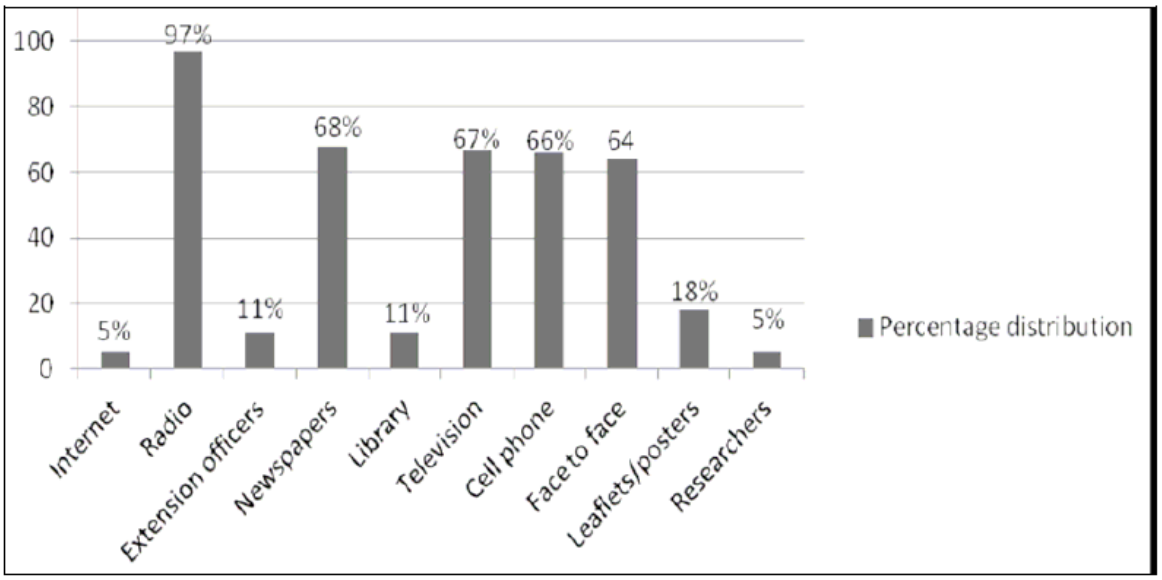

Figure 1: Communication channels used by farmers in rural areas

Source: Mtega and Msungu, 2013

Fawole (2008) conducted a study to find out the information sources and usage of pineapple farmers in Nigeria. It was observed that farmers' major daily information sources were radio (71%) and television (46%) (Table-1).

Table 1. Frequency of farmers receiving agricultural information

Frequencies						N=119	
Information Source	**Daily**	**Weekly**	**Bi-Weekly**	**Monthly**	**Quarterly**	**Mean**	**SD**
Radio	58[*71.4]	25[21.0]	1[0.8]	8[6.7]	0[0]	1.43	0.6207
Television	55[46.2]	40[33.6]	8[6.7]	13[100]	3[2.5]	1.9	11.123
Extension Agents	8[6.7]	25[21.0]	19[16.0]	51[42.9]	16[13.4]	3.35	11.541
Newspapers	28[23.5]	64[53.8]	13[0.9]	8[6.7]	6[5.0]	2.16	10.250
Neighbour	55[46.2]	30[25.2]	7[5.9]	25[21.0]	2[1.7]	2.07	12.332
Farmers' Association	22[10.1]	19[16.0]	36[30.3]	39[32.8]	13[10.9]	3.18	1.422

Figures in Parentheses indicate Percent

Source: Fawole, 2008

Hossain and Islam (2012) carried out a research in Bangladesh and observed that television was used as a source of information by more than 83% of the respondents and radio was used by only about 17% of the respondents to meet their information needs (Figure-2). Most of the rural women who were the respondents of the study needed information on agriculture and animal husbandry from the information sources (Figure-3).

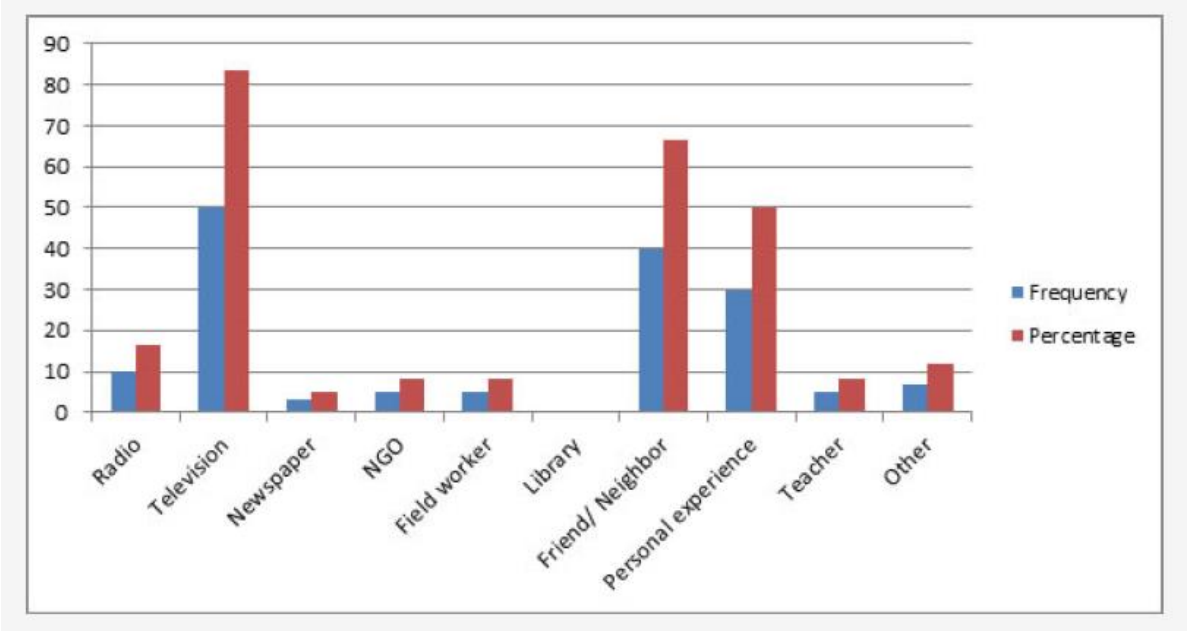

Figure 2: Sources of information the rural women use

Source: Hossain and Islam, 2012

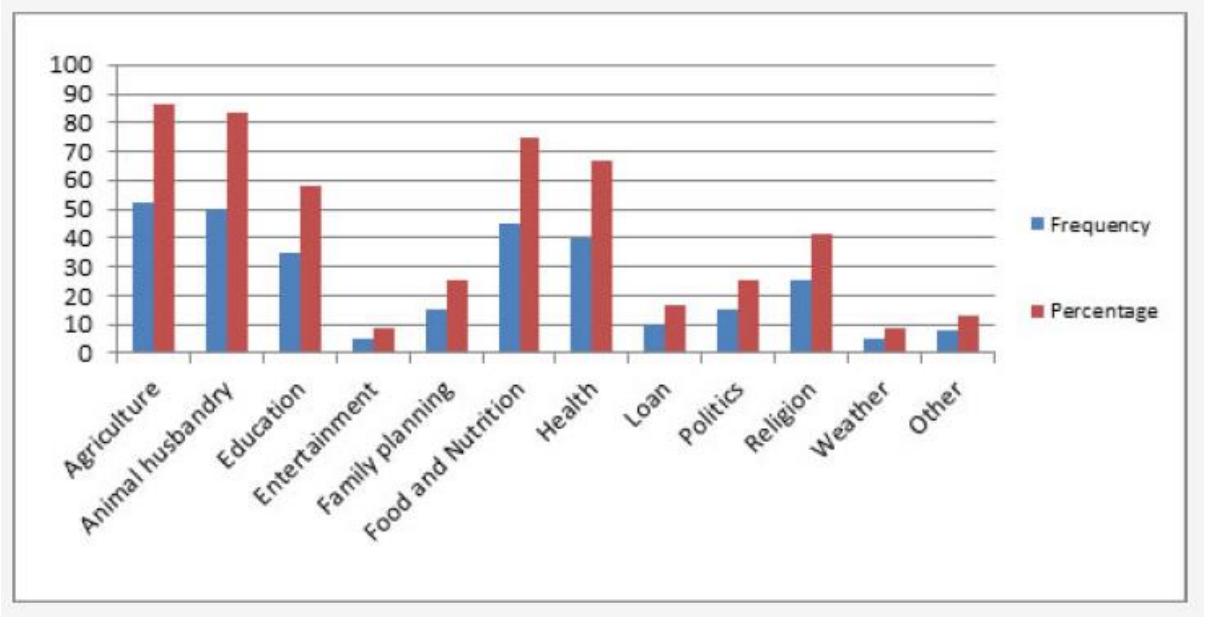

Figure 3: Types of information needs of the rural women

Source: Hossain and Islam, 2012

3.2 ROLE OF RADIO IN AGRICULTURAL DEVELOPMENT

There are a large number of research works on role of radio in agricultural development. Among those some selected works have been presented below:

Kumari *et al.* (2014) conducted a research to determine the effectiveness of the radio as an educational media to transfer agricultural information to farmers in two districts of Bihar, India. It was found in the study that level of knowledge of farmers for all questions before and after intervention had increased significantly ($P<0.05$). Among 10 questions the maximum and minimum rise in farmers' knowledge was observed in case of questions 3 and 8 respectively (Table-2).

Table 2. Frequency of correct response to pre- and post-test among farmers by questions

Items	Correct response				χ2	p
	Pre-test		Post-test			
	No.	%	No.	%		
Importance of quality seeds	17	26.9	44	69.8	17.94	0.001***
Seed production system in India	16	25.4	39	61.9	28.89	0.001***
What is certified seed	19	30.2	43	68.3	3.41	0.006**
Source of registered seed	47	74.6	48	76.2	29.42	0.001***
Site for seed production	33	52.4	46	73.0	48.26	0.001***
Sowing time	27	42.9	44	69.8	43.51	0.001***
Seed rate and sowing method	31	49.2	36	57.1	33.88	0.001***
Intercultural operation	34	53.9	36	57.1	28.11	0.001***
Disease and pest control	27	42.9	41	65.1	16.09	0.001***
Harvesting and post-harvest processing of seed	18	28.6	28	44.4	36.76	0.001***

*Indicates statisticallly significant at p<0.01
**Indicates statistically significant at p<0.001

Source: Kumari *et al.*, 2014

The mean score of farmers' knowledge increased significantly by the educational intervention through radio from 4.10 to 6.80 of a total 10, which clearly indicates that radio had an effective role in improving awareness of farmers (Table-3). Nazari and Hasbullah (2010) also noticed similar finding.

Table 3. Mean scores of farmers' knowledge by pre-test and post-test

Participants	Pre-test		Post-test		t	p
	Mean	SD	Mean	SD		
63	4.10	1.94	6.80	1.50	19.53	0.001*

* Indicates statistical significant at p<0.001

Source: Kumari *et al.*, 2014

Agwu *et al.* (2008) carried out a research to determine the adoption of improved agricultural technologies by the farmers disseminated by radio farmer programme in Enugu State, Nigeria. It was observed in the research that out of nineteen technologies adoption of six technologies by the farmers were enhanced due to radio farmer programme. The six

technologies were improved land preparation and planting of early season crops (x = 2.6), harvesting of yam and storage in barn (x = 2.7), site selection/bush burning/packing (x= 2.9), processing of cocoyam into chips and flour (x = 2.7), improved early maize cultivation (x = 2.5), weeding and fertilizer application in yam + cassava + maize intercropping (x = 2.9) and pest control in the food crop farms (x = 2.8) (Table-4).

Table 4. Mean scores of extent to which the radio farmer programme has enhanced the adoption of improved technologies disseminated as perceived by farmers

Technology	$\bar{x}$
Improved land preparation and planting of early season crops	2.60*
Improved fertilizer application in irrigated rice	1.90
Improved soil conservation in food and cash crops	1.40
Modernized drying of processed cassava chips for storage	1.70
Harvesting of yam and storage in barn	2.70*
Processing of tomatoes into paste and purée	1.00
Vaccination of small ruminants	1.03
Site selection/bush clearing/packing	2.90*
Processing of cocoyam into chips and flour	2.70*
Early maize cultivation	2.50*
Disinfections and restocking of day-old chicks	1.50
Weeding and fertilizer application in cassava + yam + maize	2.90*
Pest control in food crop farm.	2.75*
Routine vaccination of small ruminants	1.00
Harvesting, drying and storage of maize in cribs	1.00
Bee-keeping for honey production.	1.00
Modern snail rearing	1.06
Modern oil palm establishment	1.06
Improved poultry keeping	1.31

$\bar{x}$ = > 1.5

Source: Agwu *et al.*, 2008

Ango *et al.* (2013) conducted a research to examine the role of radio agricultural programmes on awareness creation among farmers in Zaria, Kaduna State, Nigeria. It was found in the study that the new practice disseminated through radio agricultural programmes were adopted by majority (97.8%) of the farmers while only (2.2%) of the farmers did not adopt the new agricultural information which they obtained from the radio (Table-5). The new technologies disseminated through radio were adopted by the farmers because of availability and portability of radio and the format in which the radio agricultural programmes were aired.

Table 5. Distribution of the farmers according to adoption of Agricultural information aired through radio programs (n=90)

Adoption of information	Frequency	Percentage
Yes	**88**	**97.8**
No	**02**	**02.2**

Source: Ango *et al.*, 2013

It was also observed in the study that 24.4% of the farmers strongly agreed that the radio agricultural programmes were effective in awareness creation. On the other hand only (1.1%) of the respondents remained undecided, disagreed and strongly disagreed in this concern (Table-5). The finding of the study indicated that radio agricultural programmes were effective media to create awareness on improved agricultural programmes among farmers. It was also found that Radio agricultural programmes were very important to majorities (97.8%) of the farmers in their agricultural practices while only 2.2% of the respondents responded that the radio agricultural programs were not important in their agricultural practices (Table-6). The findings indicate that the agricultural programmes broadcast by radio were enjoyed by majority of the farmers which assisted them to improve their level of productivity and income. Okwu *et al.* (2007) also observed similar finding.

Table 6. Distribution of farmers based on the effectiveness and importance of radio agricultural programmes in awareness creation (n=90)

Effectiveness of radio agricultural programmes	Frequency	Percentage
Strongly agreed	22	24.4
Agreed	65	72.2
Undecided	01	01.1
Disagreed	01	01.1
Importance of radio agricultural programmes		
Yes	88	97.8
No	02	02.2

Source: Ango *et al.*, 2013

Rasak and Amusat (2012) carried out a study to assess the efficacy of radio programme on the trend of agricultural commodities among farmers in Nigeria. It was observed in the study

that farmers benefited from accessing marketing information from the radio programme. The farmers benefited most from increased income (x =2.4) and least from reduced market risk (x = 2.2) (Table-7). The high score of the perceived benefits of the radio marketing information was due to general favourable disposition of famers enhancing bargaining power, boosting of farmers' agricultural product sales and adequacy of the market information.

Table 7. Respondents' perceived benefits of the commodity trend programme

Variable	Mean ($\bar{x}$)	SD
Increased income	2.4	0.57
Higher farm gate prices	2.3	0.65
New expanded market for farm products	2.3	0.69
Reduced market risk	2.2	0.71
Improved farm management	2.3	0.83
Overall benefits	2.3	0.67

Source: Rasak and Amusat, 2012

Amusat *et al.* (2018) carried out a study to examine listeners' perception of the contents of Ere-agbe agricultural radio programme in peri-urban area of Ibadan, Nigeria. It was found in the research that 56.7%, 55.2% and 46.7% of the respondents indicated that, to a large extent, the radio agricultural programme assisted them in getting improved farm management, provided information on the right time for crop cultivation and provided increased marketing opportunities for their farm produce, respectively. Additionally, 51.7% of the respondents stated that listening to Ere-agbe radio programme assisted them to get better access to agricultural inputs, since they could identify the locations where improved seeds and other farm input can be purchased. Similarly, 51.7% said that the radio programmes helped them to learn new agricultural technologies (Table-8). Khanal (2011) also observed similar finding.

Table 8. Distribution of respondents by benefits derived from Ere-agbe farm broadcast

Benefits	Large extent	Moderate extent	No extent
Better access to agricultural inputs	51.7	48.3	-
Improved farm management	56.7	43.3	-
Increased farmers' income	41.4	58.6	-
Awareness on loan facility	28.6	42.9	28.6
Increased marketing opportunities	46.7	46.7	6.7
Opportunities to learn new agricultural technologies	51.7	44.8	3.4
Ability to interact with fellow farmers through the radio programme	44.8	31.0	24.1
The programme teaches me what to cultivate at the right time	55.2	41.4	3.4
The programme teaches me improved cultural practices at the right time	69.0	31.0	-
The programme encourages me to practice commercial agriculture	46.7	46.7	6.7

Source: Amusat *et al.*, 2018

3.3 ROLE OF TELEVISION IN AGRICULTURAL DEVELOPMENT

Muhammad *et al.* (2004) conducted a research to assess the role of television in agricultural technology transfer in Faisalabad, Pakistan. The study revealed that the majority (84.80%) of respondents obtained only up to 25% agricultural information through television while a few respondents (12.80%) obtained 25-50% information through agricultural telecasts by television. Only a negligible number of respondents obtained more than 50% agricultural information through television (Table-9).

Table 9. Extent of agricultural information obtained through TV

Sl. No.	Extent of information	No.	%
1	Very low (up to 25%)	106	84.80
2	Low (25-50%)	16	2.80
3	Medium (50-75%)	02	01.60
4	High (Above 75%)	01	00.80
	Total	125	100.00

Source: Muhammad *et al.*, 2004

Chhachhar *et al.* (2012) carried out a study to assess the role of television channels on agricultural development on the farmers in Sindh, Pakistan. In the research it was found that majority (80.5%) of the respondents found television as moderately effective in increasing agricultural income while the television was perceived as very effective in increasing agricultural income by the smallest percentage (5.5%) of the respondents. However, 14% of the respondents opined that television was not effective at all in increasing agricultural income (Table-10).

Table 10. Respondents perceptions on the effectiveness of television in increasing agricultural income

Television Programmes	No. (%) of respondents
Very effective in increasing agricultural income	11 (5.5%)
Moderate effective in increasing agricultural income	161 (80.5%)
Not effective in increasing agricultural income	28 (14.0%)

Source: Chhachhar *et al.*, 2012

A study was conducted by Alam and Haque (2014) to find out the contribution of various television channels on dissemination of agricultural information to the farmers for agricultural development in Bangladesh. It was revealed in their research that most of the respondents took moderate initiatives in order to use the agricultural technologies and

techniques which they learnt by watching the agricultural programmes on television (Table-11).

Table 11. Extent of initiatives to apply knowledge in agricultural process after watching

Extent of initiatives	Number of Respondents	Percentage
Strong initiatives	10	16.67
Moderately strong initiatives	41	68.33
Less strong initiatives	9	15.00
Total	60	100.00

Source: Alam and Haque, 2014

It was also observed in the study that majority of the respondents obtained high production using the agricultural information obtained from television channels (Figure-1).

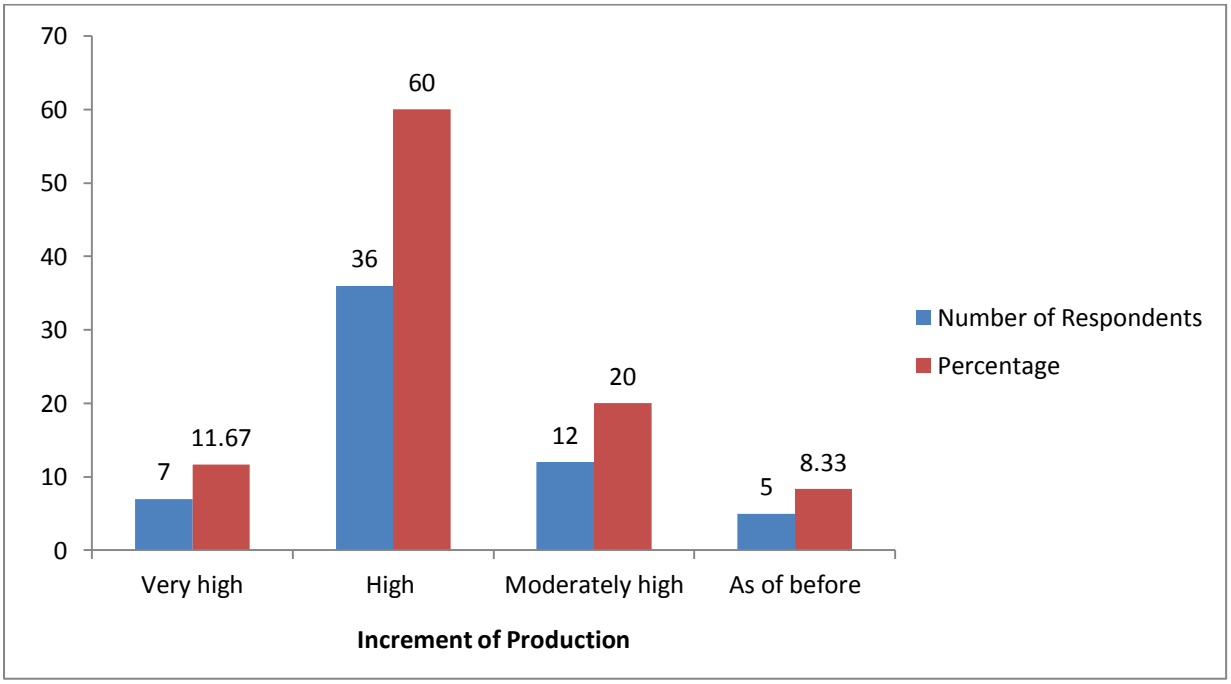

Figure 4. Effect of information adopting in agricultural production

Source: Alam and Haque, 2014

Prathap and Ponnusamy (2006) carried out a study to determine the relative effectiveness of four mass media channels (radio, television, newspaper, and Internet) on knowledge gain of rural women who belonged to self-help groups in three villages of Tamil Nadu, India. The selected technology was rabbit farming and parallel message on rabbit farming were transmitted through all the treatment mass media channels to assess the knowledge gain by

the rural women on rabbit farming. The researchers found that significant differences were observed in effectiveness of the four treatments in transmitting knowledge (Table-12). In the study Duncan's Post Hoc Test was performed to identify which groups differ.

Table 12. Analysis of variance for gain in knowledge among treatments

	Degrees of freedom	Sum of Squares	Mean Square	F-value
Between Groups	3	78.500	26.167	6.322**
Within Groups	140	579.500	4.139	
Total	143	658.000		

Note. **Significant at 0.01 level

Source: Prathap and Ponnusamy, 2006

It was found from Duncan's Post Hoc Test that the radio and Internet treatment groups were homogenous in nature (column 1); the Internet and newspaper treatment groups were also homogenous (column 2). Only the television treatment group (column 3) differed from the other two (Table-13). The finding thus implies that the respondents who were exposed to television differed significantly from the other three groups in gaining knowledge on rabbit farming. The group mean of 15.08 implies that the television was the most effective and superior treatment for gaining knowledge of the respondents followed by newspaper, Internet and radio.

Table 13. Duncan's post hoc test for comparison of differences

Medium	Means for Groups (Subset for alpha = 0.05)		
	1	2	3
Radio (T_1)	13.03		
Internet (T2)	13.78	13.78	
Newspaper (T3)		14.11	
Television (T4)			15.08

Source: Prathap and Ponnusamy, 2006

Nazari and Hassan (2011) conducted research to assess the role of television as an educational tool in enhancing farmers' knowledge in Kohgiluyeh va Buyer Ahmad province, Iran. The study was conducted in a randomized subject, pretest-posttest design among those

farmers who were working and residing in Kohgiluyeh va Buyer Ahmad province, Iran. The researchers found that the level of knowledge of farmers concerned with 10 questions before and after the intervention increased significantly ($P<0.05$) (Table-14). It was found in the research that number of correct answers given by the farmers increased during post test. *Chi*-square test was conducted and it was observed that the level of knowledge of the farmers was improved significantly after watching the "Khoda Ghovat Keshavarz" program broadcast on television in Kohgiluyeh va Boyer Ahmed province. Al-Namlah (1998) also noticed similar finding.

Table 14. *Chi*-square test of correct response of TV viewer (Kohgiluyeh va Buyer Ahmad) in pre and post-test by questions

Item	Correct response				$\chi 2$	df	P value
	Pre test		Post test				
	No.	%	No.	%			
Q1	37	25.5	94	66.7	16.78	1	0.001*
Q2	38	27	91	64.5	24.49	1	0.001*
Q3	42	29.8	93	66	4.23	1	0.04*
Q4	60	42.9	101	72.1	31.42	1	0.001*
Q5	63	44.7	92	65.2	50.08	1	0.001*
Q6	54	38.3	97	68.8	35.12	1	0.001*
Q7	68	48.2	77	54.6	25.32	1	0.001*
Q8	67	47.5	82	58.2	23.02	1	0.001*
Q9	58	41.1	98	69.5	22.24	1	0.001*
Q10	37	26.2	58	41.1	33.05	1	0.001*

* Indicated statistically significant at $p<0.05$

Source: Nazari and Hassan, 2011

An increase in mean of knowledge score was observed from 3.73 during the pre test to 6.26 in post test out of 10 for the television agricultural program. t-test was employed and a significance difference was observed between the result of the pre test and post test ($P<0.001$) (Table-15). The findings indicated positive effect of television on the improvement of farmers' knowledge.

Table 15. t-test for change in knowledge level from pretest to posttest

Media	n	Pre test		Post test		t	p
		M	SD	M	SD		
TV	140	3.73	2.11	6.26	1.67	19.63	0.000*

* Indicated statistically significant at $p<0.05$

Source: Nazari and Hassan, 2011

Jafri *et al.* (2014) carried out a study to assess the existence of TV as diversified information source in Lahore, Pakistan followed by the challenges being faced. It was found in the research that farmers obtained information regarding all aspects of agriculture but average mean of all the aspects fell in between the low to medium. Farmers obtained information regarding almost all the vital steps of crops cultivation in different degree. The average mean (2.51) indicated low to medium level of information acquisition. Information concerned with single practice weather related information obtained the maximum mean value of 4.19. Plant protection was the only practice which obtained mean value of 3.03. In case of all other parameters information dissemination was not satisfactory since any of the mean could not crosse the medium level. Khan *et al.* (2010) also observed similar research finding. However, highest information was obtained by the farmers on weather information since it is concerned with climate change issue (Table-16).

It was also observed in the study that average mean (2.65) of obtaining information about livestock fell in between very low and medium. Only the Information concerned with livestock marketing was the only issue which obtained mean value of 3.23 which indicated medium to high information level. All other livestock information was in between very low to medium level (Table-17).

Poultry marketing information obtained the highest mean value of 3.08. Average mean of all poultry related aspects obtained the mean value of 2.73 which is closer to the medium level of acquisition (Table-18).

Table 16. Agricultural information related to crops obtained through TV

Type of agricultural information	Mean	SD
Weather updates	4.19	1.06
Plant protection	3.03	0.88
Post harvest techniques	2.79	1.20
Fertilizer application	2.62	0.81
Irrigation	2.53	0.92
Sowing methods	2.54	0.87
Agri. Loan schemes	2.54	1.12
Harvesting	2.48	1.12
Farm machinery	2.27	0.98
Time of sowing	2.15	0.74
Agro forestry	1.89	0.81
Crop varieties	1.85	0.82
Land preparation	1.82	0.73

Average Mean: 2.51; Average SD: 0.92

Source: Jafri *et al.*, 2014

Table 17. Extent of agricultural information related to livestock obtained through TV

Information regarding livestock	Mean	SD
Marketing	3.23	0.75
Breeding techniques	2.83	0.83
Vaccination	2.63	0.84
Disease management	2.48	0.70
Breed selection	2.45	0.96
Feed and fodder	2.31	1.01

Average Mean: 2.65; Average SD: 0.84

Source: Jafri *et al.*, 2014

Table 18. Agricultural information related to poultry farming obtained through TV

Information regarding poultry	Mean	SD
Marketing	3.08	1.08
Vaccination	2.88	0.93
Feeding	2.52	0.82
Breed selection	2.45	0.74

Average Mean: 2.73; Average SD: 0.89

Source: Jafri *et al.*, 2014

It was found in the study that the highest mean value was obtained in case of Apiculture and thus it was ranked first followed by the fish farming and sericulture which obtained the mean values of (2.29 and 2.17) respectively. Fish farming and sericulture are expensive and time consuming also which hindered them to perform these farming. Average mean value (2.28) indicated that the information gain was closer to low level (Table-19).

Table 19. Agricultural information related to other agriculture enterprises obtained through TV

Other Agricultural Enterprises	Mean	SD
Apiculture	2.39	0.83
Fish farming	2.29	0.46
Sericulture	2.17	0.89

Average Mean: 2.28; Average SD: 0.72

Source: Jafri *et al.*, 2014

Hasan *et al.* (2016) carried out a research to determine the existing gap for getting agricultural knowledge from the most preferable sources and propose the improved service design so that personalize agricultural knowledge dissemination for the farmers in Bangladesh can be given support. It was found that the farmers of Bangladesh mostly rely on television for getting update on weather forecast (Table-20). Bangladesh Television (BTV) is the most watched TV channel (83%) nationally. Television programs are preferable for getting information on cultivation technique since there are 92% viewship in rural areas and 69% viewship in urban areas (Human Development Report UNDP, 2010).

Table 20. Principal sources of agricultural information among farming population

Types of Information Sought	Principal Information Source					
	Extension Officer	Private Sector	Peer group	Lead farmer	TV	Others
High yields crop	34.8%	22.4%	12.6%	6.6%	19.4%	4.2%
Cultivation technique	20.6%	10.6%	18.8%	10.6%	24.6%	14.8%
Soil condition	35.4%	3.8%	9.6%	7.0%	13.8%	30.4%
Seed usage	20.0%	39.0%	20.8%	8.2%	4.4%	7.6%
Pesticide	14.2%	65.2%	5.4%	6.6%	2.8%	5.8%
Fertilizer usage	15.6%	55.6%	8.8%	7.8%	2.4%	9.8%
Irrigation method	12.4%	12.4%	23.6%	13.6%	5.2%	32.8%
Market access	6.6%	20.0%	41.0%	15.2%	5.2%	12.0%
Weather forecast	2.6%	1.4%	4.2%	1.4%	62.2%	28.2%

Source: Hasan *et al.*, 2016

3.4 PROBLEMS RELATED TO USE OF RADIO AND TELEVISION IN AGRICULTURE

Obidike (2011) conducted a study in Nsukka, Nigeria and it was found that some constraints were faced by the rural farmers of Nsukka in using radio and television in accessing agricultural information for better crop and livestock production. The constraints were poor radio and television signals (3.41±.069), non-availability of electricity/constant power interruptions in most Nsukka villages (3.41±.087), illiteracy (3.40±.086) and agricultural information not being broadcast on radio and television in native Nsukka dialect (3.30±.105) (Table-21).

Table 21. Descriptive statistics on constraints encountered by the Nsukka rural farmers' respondents in their quest to access agricultural information from their community

Constraints	N	Mean	±Std
Poor public relation of the extension workers	96	3.43	0.082
Inability to read and write (illiteracy)	96	3.40	0.086
Poor radio and television signals	96	3.41	0.069
Agricultural information on radio and television is always aired at odd hours when farmers who desire such information have gone to their farms.	96	3.14	0.105
Lack of rural electrification/constant power interruption in communities that have electricity supply	96	3.41	0.087
Lack of access roads for easy community visit of extension workers	96	3.48	0.077
Agricultural information is not broadcast on radio and television in Nsukka dialect	96	3.30	0.105
Lack of money to purchase newsletters, leaflets on agricultural information	96	3.41	0.088

Source: Obidike, 2011

CHAPTER IV

CONCLUSIONS

Conclusions:

Based on the findings, the following conclusions have been drawn:

- Radio and television were used by the farmers in different countries to different extent.
- Radio had an effective role in improving awareness, increasing level of knowledge of the farmers and adoption of improved agricultural technologies by the farmers and assisting them by providing market information.
- Television had effective role in increasing agricultural knowledge of the farmers, increasing production and agricultural income of the farmers.
- Several constraints were faced by the farmers in using radio and television in agriculture.

Recommendations:

- The programmes of radio and television may be more effective for agricultural development through their use along with other agricultural extension methods and integration with other technologies.

- Another way of increasing effectiveness of radio and television may be achieved through facilitation by extension workers in IPM/ICM/CIG clubs.

- Further research regarding role of radio and television in agricultural development should be undertaken to ensure the increased role of these media on agricultural advancement.

- Effective measures should be taken to overcome the constraints faced by the farmers in using radio and television.

REFERENCES

Abebe, G. K., J. Bijman, S. Pascucci, and O. Omta. 2013. Adoption of improved potato varieties in Ethiopia: The role of agricultural knowledge and innovation system and smallholder farmers' quality assessment. *Agric. Syst.* 122: 22–32.

Agwu, A. E., J. N. Ekwueme and A. C. Anyanwu. 2008. Adoption of improved agricultural technologies disseminated via radio farmer programme by farmers in Enugu State, Nigeria. *Afr. J. Biotechnol.* 7(9):1277-1286.

AIS (Agriculture Information Service). 2018. Krishi Diary (Agriculture Diary). Dhaka: Agriculture Information Service. P. 80.

Alam, M. K. and M. A. Haque. 2014. Contribution of television channels in disseminating agricultural information for the agricultural development of Bangladesh: a case study. *Libr. Philos. Pract.* (e-journal). 1048. [http://digitalcommons.unl.edu/libphilprac/1048].

Alam, M. Z., Ahmad, R., Munni, S., Haque, F. Zaman, M. M., Alam, M. S. and Haque, M. R. 2012. Krishi Sanbadikata (Agriculture Journalism), Dhaka: Chandrabati Acadrmy. Pp. 57-58.

Al-Namlah, S. A. S. 1998. The Impact of the Agricultural Television Program on Knowledge, Skills and Attitudes of Farmers in Kharj Region in the Kingdom of Saudi Arabia. M.Sc thesis. Department of Agricultural Extension and Rural Sociology, College of Agriculture, King Saud University.

Amusat, A. S., A. W., Dauda and T. I., Omirin. 2018. Listeners' perception of the contents of Ere-agbe farm broadcast programme in peri-urban area of Ibadan, Nigeria. *Dir. Res. J. Agric. Food Sci.* 6(2): 49-54.

Ango, A. K., A. I. Illo, A. N. Abdullahi, M. A. Maikasuwa and A. Amina. 2013. Role of farm radio agricultural programmes in disseminating agricultural technology to rural famers for agricultural development in Zaria, Kaduna State, Nigeria. *Asian J. Agric. Ext. Econ. Sociol.* 2(1): 54-68.

Baig, M. B. and Aldosari, F. 2013. Agricultural extension in Asia: Constraints and options for improvement. *J. Ani. Plant Sci.* 23(2): 619-632.

Bangladesh Betar. 2018. [http://betar.portal.gov.bd/site/page/25ed40f5-6356-41a6-9e02-768ad3574db8].

Bangladesh Television. 2018. [http://www.btv.gov.bd/site/page/e487d0cb-a283-4640-9bed-fa73044d84bd/History].

Chhachhar, A. R., M. N. Osman and S. Z. Omar. 2012. Role of television in agriculture development of Sindh, Pakistan. *Hum. Commun*. A publication of the Pacific and Asian communication association. 15(1): 1-11.

Department of Agricultural Extension (DAE). 1999. Agricultural Extension Manual, Dhaka: Department of Agricultural Extension, Ministry of Agriculture. P. 149.

Department of Agricultural Extension (DAE). 2016. Agricultural Extension Manual, Dhaka: Department of Agricultural Extension. Ministry of Agriculture. Pp. 231-236.

Datt, G. and M. Ravallion. 1996. How important to India's Poor is the sectoral composition of growth? *World Bank Econ. Rev.* 10 (1): 1–26.

Fawole, O. P. 2008. Pineapple farmers' information sources and usage in Nigeria. *Bulg. J. Agric. Sci.* 14(4): 381-389.

Hasan, M., M. Ito and A. Ahmed. 2016. Dissemination of Personalized Agricultural Knowledge for Farmers in Bangladesh. *Int. J. Inov. Res. Dev.* 5(3): 65-69.

Hossain, A. and Islam, S. 2012. Information needs of rural women: a study of three villages of Bangladesh. *Libr. Philos. Pract.* (e-journal). 693. [http://digitalcommons.unl.edu/libphilprac/693].

Human Development Report UNDP. 2010. [http://a2i.pmo.gov.bd/sites/default/files/resource_docs/Concept%20Note%20for%20HDV.pdf.].

Interesting Engineering. 2016. 35 Inventions That Changed The World. [https://interestingengineering.com/35-inventions-that-changed-the-world].

Jafri, M. N., G. A. Khan, S. Muhammad, H. Munir, M. Iftikhar, S. Ashraf. 2014. TV as diversified agricultural information source perceived by farmers: issues and concerns. *Int. J. Agr. Ext.* 2(3): 235-241.

Jahan, N. 2017, February 24. Bangladesh Betar - The Story of Glory. *The Daily Star*. [https://www.thedailystar.net/star-weekend/heritage/bangladesh-betar-the-story-glory-1365967].

Katalyst. 2018. 'Television Krishi Shafollo' won Commward 2015. [http://katalyst.com.bd/archivephasethree/television-krishi-shafollo-won-commward-2015/].

Khan, G. A., S. Muhammad, K. M. Chaudhry and M. A. Khan. 2010. Present status and future preferences of electronic media as agricultural information sources by the farmers. *Pak. J. Agri. Sci.* 47(2): 166-172.

Khanal, S. R. 2011. Role of radio on agricultural development: A review. Bodhi: *Interdiscip. J.* 6(4): 17-19.

Kumari, N., S. B. Choudhary, S. K. Jha and S. R. K. Singh. 2014. Radio: An educational media to transfer agricultural information among farmers. *Indian Res. J. Ext. Edu.* 14(2): 138-140.

Mendola, M. 2007. Agricultural technology adoption and poverty reduction: A propensity-score matching analysis for rural Bangladesh. *Food Policy.* 32(3): 372–393.

Mtega, W. P. and A. C. Msungu. 2013. Using Information and Communication Technologies for enhancing the accessibility of agricultural information for improved agricultural production in Tanzania. *Electron. J. Inf. Syst. Dev. Ctries.* 56(1): 1-14.

Muhammad, S., S. A. Butt and I. Ashraf. 2004. Role of television in agricultural technology transfer. *Pak. J Agri. Sci.* 41(3-4): 158-161.

National Academy of Sciences. 2018. Radio & Television Timeline. [http://www.greatachievements.org/?id=3659].

Nazari, M. R. and A. H. Hasbullah. 2010. Radio as an Educational Media: Impact on Agricultural Development. *J. South East Asia Res. Cent. Commun. Hum.* 2: 13-20.

Nazari, M. R. and M. S. B. H. Hassan. 2011. The role of television in the enhancement of farmers' agricultural knowledge. *Afr. J. Agric. Res.* 6(4): 931-936.

Oakley, P. and C. Garforth. 1985. Guide to Extension Training. Rome: Food and Agriculture Organization of the United Nations. [http://www.fao.org/docrep/t0060e/T0060E05.htm].

Obidike, N. A. 2011. Rural farmers' problems accessing agricultural information: A case study of Nsukka local government area of Enugu State, Nigeria. *Libr. Philos. Pract.* (e-journal). 660. [http://digitalcommons.unl.edu/libphilprac/660].

Okwu, O. J, A. A. Kaku and J. I. Aba. 2007. An Assessment of the use of radio in agricultural information dissemination: A case study of Radio Benue in Nigeria. *Afr. J. Agric. Res.* 2(1): 14-19.

Oyegbami, A. and E. Fabusoro. 2003. The Use of Radio and Television as Sources of Agricultural Information among Poultry Farmers in Egbeda Local Government Area of Oyo State, Nigeria. *Moor J. Agric. Res.* 4(1): 164-169.

Prathap, D. P. and K. A. Ponnusamy. 2006. Effectiveness of Four Mass Media Channels on the Knowledge Gain of Rural Women. *J. Int. Agric. Ext. Educ.* 13(1): 73-81.

Sife, A, E. Kiondo and J. G. Lyimo-Macha. 2010. Contribution of Mobile Phones to Rural Livelihoods and Poverty Reduction in Morogoro Region, Tanzania. *Electron. J. Info. Syst. Dev. Ctries.* 42(3): 1-15. [http://www.ejisdc.org/ojs2../index.php/ejisdc/article/viewFile/660/323.].

Rasak, O. B. and A. S. Amusat. 2012. Perceived efficacy of radio agricultural commodities trend programme among farmers in Oyo State, Nigeria. *J. Media and Commun. Stud.* 4(3): 46-51.

Wikipedia. 2018a. Invention of radio. [https://en.wikipedia.org/wiki/Invention_of_radio].

Wikipedia. 2018b. List of radio stations in Bangladesh. [https://en.wikipedia.org/wiki/List_of_radio_stations_in_Bangladesh].

Wikipedia. 2018c. List of television stations in Bangladesh. [https://en.wikipedia.org/wiki/List_of_television_stations_in_Bangladesh].